

ABSTRACT

A power transfer assembly comprises a power turbine constructed of a nickel alloy; a gear shaft constructed of a low-carbon carburized gear material; and a transition portion between and welded to each of the power turbine and gear shaft. The nickel alloy may be welded to the transition portion by inertia welding, and the low-carbon carburized gear material may be welded to the transition portion by electron beam welding, for example. The power transfer assembly may be used in a microturbine engine, for example, to transfer rotation of a power turbine to an electric generator.

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